WHAT IS CLAIMED:

1. A guidewire protection apparatus for use in vascular procedures comprising:

a tubular guidewire having a proximal end, a distal end and a lumen;

a control cable having a proximal end and a distal end disposed in the lumen of the guidewire; and

a sheathless filter distally coupled to the control cable and proximally coupled to the guidewire, the filter radially expanding in response to displacement of the control cable relative to the guidewire such that the filter presents at least a convex primary surface to a flow of blood within a vessel into which the guidewire has been introduced.

2. The apparatus of claim 1, further including means for resisting displacement of the control cable relative to the guidewire proximate the proximal end of the guidewire.

3. The apparatus of claim 2, wherein the means for resisting displacement comprises an intermediate shaft disposed between the guidewire and the control cable, the intermediate shaft being crimpable to selectively resist movement of the control cable and maintain a position of the control cable relative to the guidewire.

4. The apparatus of claim 2, wherein the means for resisting displacement comprises a clamping mechanism to selectively clamp the control cable along the guidewire to resist

movement of the control cable and maintain a position of the control cable relative to the guidewire.

5. The apparatus of claim 2, wherein the means for resisting displacement comprises a stop that limits displacement of the control cable relative to the guidewire, the stop being disposed between the distal and proximal end of the sheathless filter.

6. The apparatus of claim 1, wherein the sheathless filter comprises:

a wire mesh; and

multifilament polymer fibers,

wherein the wire mesh forms a tubular braided framework on which the fibers are woven to create the sheathless filter.

7. The apparatus of claim 6, wherein the wire mesh is constructed of a biocompatible wire.

8. The apparatus of claim 7, wherein the wire mesh is constructed of a Nitinol wire.

9. The apparatus of claim 6, wherein the multifilament polymer fibers are woven into a fabric that is then attached to the wire mesh.

10. The apparatus of claim 6, wherein a distal end of the wire mesh is operably attached to the control cable and a proximal end is operably attached of the wire mesh to the guidewire.

11. The apparatus of claim 6, wherein the wire mesh and the multifilament polymer fibers are spaced with respect to each other so as to define a maximum pore size of 0.010 inches that will effectively capture particles greater than 100 microns in diameter.

12. The apparatus of claim 1, wherein the sheathless filter includes means for visibly identifying the filter under fluoroscopy.

13. The apparatus of claim 1, wherein the sheathless filter includes a distal interior face presenting a secondary, concave surface to the flow of blood within the vessel into which the guidewire has been introduced.

14. The apparatus of claim 1, wherein the proximal end of the guidewire assembly is free of mechanical connections and obstructions and functions as a conventional guidewire while the sheathless filter is deployed.

15. The apparatus of claim 1, wherein the guidewire has an outer diameter of less than 0.046 inches.

16. The apparatus of claim 1, wherein the sheathless filter is formed of resilient flexible members interlaced to form a tubular net, the tubular net having a undeployed state in which the flexible members lie generally parallel to a longitudinal axis of the guidewire and a plurality of selectively deployable states in which the flexible members are radially expanded from the

longitudinal axis of the guidewire to a diameter coincident with a diameter of the vessel into which the guidewire had been introduced.

17. The apparatus of claim 16, wherein the plurality of selectively deployable states include a state in which the flexible members are radially expanded and effectively abut each other such that blood is unable to pass through the sheathless filter.

18. The apparatus of claim 16, wherein the plurality of selectively deployable states include a state in which the flexible members define a pore size between adjacent members that is less than 0.010 inches so as to filter particles greater than 200 microns.

19. A method of protecting against plaque, thrombus or grumous material flowing downstream during a vascular procedure, the method comprising:

guiding a tubular guidewire into a blood vessel and positioning a protective sheathless filter proximate a distal end of the guidewire distal to a region of a blood vessel to be treated;

displacing a control cable coaxially disposed with the guidewire to cause expansion of the protective sheathless filter to span a diameter of the blood vessel and present at least a convex surface to a flow of blood within the blood vessel;

selectively securing the control cable relative to the guidewire to maintain a position of the protective sheathless filter during the vascular procedure;

performing the vascular procedure;

introducing a thrombectomy catheter over a proximal end of the guidewire and advancing the catheter to the region of the blood vessel to be treated;

removing plaque, thrombus or grumous material captured by the protective sheathless filter during the vascular procedure via the thrombectomy catheter;

releasing the control cable relative to the guidewire and causing the protective sheathless filter to contract; and

withdrawing the guidewire out of the blood vessel.

20. The method of claim 19, wherein the vascular procedure comprises an asymmetric water jet atheroectomy.

21. The method of claim 19, wherein the vascular procedure comprises an asymmetric water jet thrombectomy.

22. The method of claim 19, wherein the step of removing material utilizes a water jet that directs a working fluid at a velocity sufficient to generate a stagnation pressure large enough for removal of the material.

23. The method of claim 19, wherein the step of removing material utilizes aspiration to remove the material.

24. A system for filtering and removing plaque, thrombus or grumous material coincident with a vascular procedure comprising:

a guidewire having a sheathless filter positioned proximate a distal end of the guidewire, the sheathless filter being selectively deployable such that the filter presents at least a convex surface to a flow of blood within a vessel into which the guidewire has been introduced prior to the vascular procedure;

an evacuation catheter having an evacuation lumen to be tracked over the guidewire and at least one evacuation opening proximate a distal end of the evacuation lumen; and

means for removing plaque, thrombus or grumous material captured by the sheathless filter during the vascular procedure via the evacuation lumen of the evacuation catheter prior to the sheathless filter being selectively undeployed and the guidewire removed from the vessel.

25. The system of claim 24, further comprising:

a therapeutic catheter having a fluid lumen and trackable over the guidewire as part of the vascular procedure, the fluid lumen including at least one orifice proximate a distal end and opening to a side of the catheter; and

means for supplying a working fluid under high pressure to the fluid lumen of the therapeutic catheter such that the working fluid is directed from the at least one orifice as a fluid jet stream longitudinally impacting on a deposit in the vessel to erode the deposit

and generate free floating plaque, thrombus or grumous material in the vessel proximal to the sheathless filter.

26. The system of claim 25, wherein the therapeutic catheter and the evacuation catheter comprise a single catheter.

27. The system of claim 26, wherein the therapeutic catheter includes a plurality of orifices and the corresponding plurality of fluid jet streams create a localized low pressure region that draws plaque, thrombus or grumous material into the evacuation lumen.

28. The system of claim 23, wherein the guidewire has a proximal end, a distal end and a lumen and further comprises a control cable having a proximal end and a distal end disposed in the lumen of the guidewire, wherein the sheathless filter is distally coupled to the control cable and proximally coupled to the guidewire.

29. The system of claim 28, further including means for resisting displacement of the control cable relative to the guidewire proximate the proximal end of the guidewire.

30. The system of claim 29, wherein the means for resisting displacement comprises an intermediate shaft disposed between the guidewire and the control cable, the intermediate shaft being crimpable to selectively resist movement of the control cable and maintain a position of the control cable relative to the guidewire.

31. The system of claim 29, wherein the means for resisting displacement comprises a clamping mechanism to selectively clamp the control cable along the guidewire to resist movement of the control cable and maintain a position of the control cable relative to the guidewire.

32. The system of claim 29, wherein the means for resisting displacement comprises a stop that limits displacement of the control cable relative to the guidewire, the stop being disposed between the distal and proximal end of the sheathless filter.

33. The system of claim 23, wherein the sheathless filter comprises:

a wire mesh; and

multifilament polymer fibers,

wherein the wire mesh forms a tubular braided framework on which the fibers are woven to create the sheathless filter.

34. The system of claim 33, wherein the wire mesh is constructed of a biocompatible wire.

35. The system of claim 34, wherein the wire mesh is constructed of a Nitinol wire.

36. The system of claim 33, wherein the multifilament polymer fibers are woven into a fabric that is then attached to the wire mesh.

37. The system of claim 33, wherein a distal end of the wire mesh is operably attached to the control cable and a proximal end is operably attached of the wire mesh to the guidewire.

38. The system of claim 33, wherein the wire mesh and the multifilament polymer fibers are spaced with respect to each other so as to define a maximum pore size of 0.010 inches that will effectively capture particles greater than 200 microns in diameter.

39. The system of claim 23, wherein the sheathless filter includes means for visibly identifying the filter under fluoroscopy.

40. The system of claim 23, wherein the sheathless filter includes a distal interior face presenting a secondary, concave surface to the flow of blood within the vessel into which the guidewire has been introduced.

41. The system of claim 23, wherein the proximal end of the guidewire assembly is free of mechanical connections and obstructions and functions as a conventional guidewire while the sheathless filter is deployed.

42. The system of claim 23, wherein the guidewire has an outer diameter of less than 0.046 inches.

43. The system of claim 23, wherein the sheathless filter is formed of resilient flexible members interlaced to form a tubular net, the tubular net having a undeployed state in which the flexible members lie generally parallel to a longitudinal axis of the guidewire and a plurality of selectively deployable states in which the flexible members are radially expanded from the longitudinal axis of the guidewire to a diameter coincident with a diameter of the vessel into which the guidewire had been introduced.

44. The system of claim 43, wherein the plurality of selectively deployable states include a state in which the flexible members are radially expanded and effectively abut each other such that blood is unable to pass through the sheathless filter.

45. The system of claim 43, wherein the plurality of selectively deployable states include a state in which the flexible members define a pore size between adjacent members that is less than 0.010 inches so as to filter particles greater than 200 microns.